
1. Find the maximum height of the car. Find the height of the car when braking begins (HINT: Look for the top of the tallest copper fins along the tower.).

2. Calculate the gravitational potential energy at the top of the ride.

3. Calculate the velocity of the car at the moment braking begins. What ultimately happens to all of the energy of the system?

4. Find the acceleration of the car as it begins its descent. Find the maximum acceleration of the car while braking.

5. Draw position – time, velocity – time, and acceleration – time graphs for one complete cycle.

6. Draw force diagrams of the occupants at each of the point indicated in the figure. For points B and C indicate the forces in each direction of travel.

7. Calculate or measure the magnitude of all forces acting on you at each of the indicated points. For points B and C, separate calculations need to be made for each direction of travel. Assume your mass to be 70 kg.

8. The braking system on this attraction is unique: it is passive and requires no friction. The back of each car has very strong magnets that induce eddy currents in the long copper sheets in the lower portion of the tower. What is the significance of these eddy currents? Why do the copper sheets have occasional slits in them?

9. Carefully observe the motion of the car on the way up. Does the acceleration change when the car leaves the copper sheet region on the tower, and if so, by how much? What would account for this change?


10. This is one of the few rides in amusement parks in which the average stopping force can be found by using the Impulse – Change in Momentum relationship. Calculate the change in momentum during braking. What is the average braking force?